



Background of Spoke014 cavity

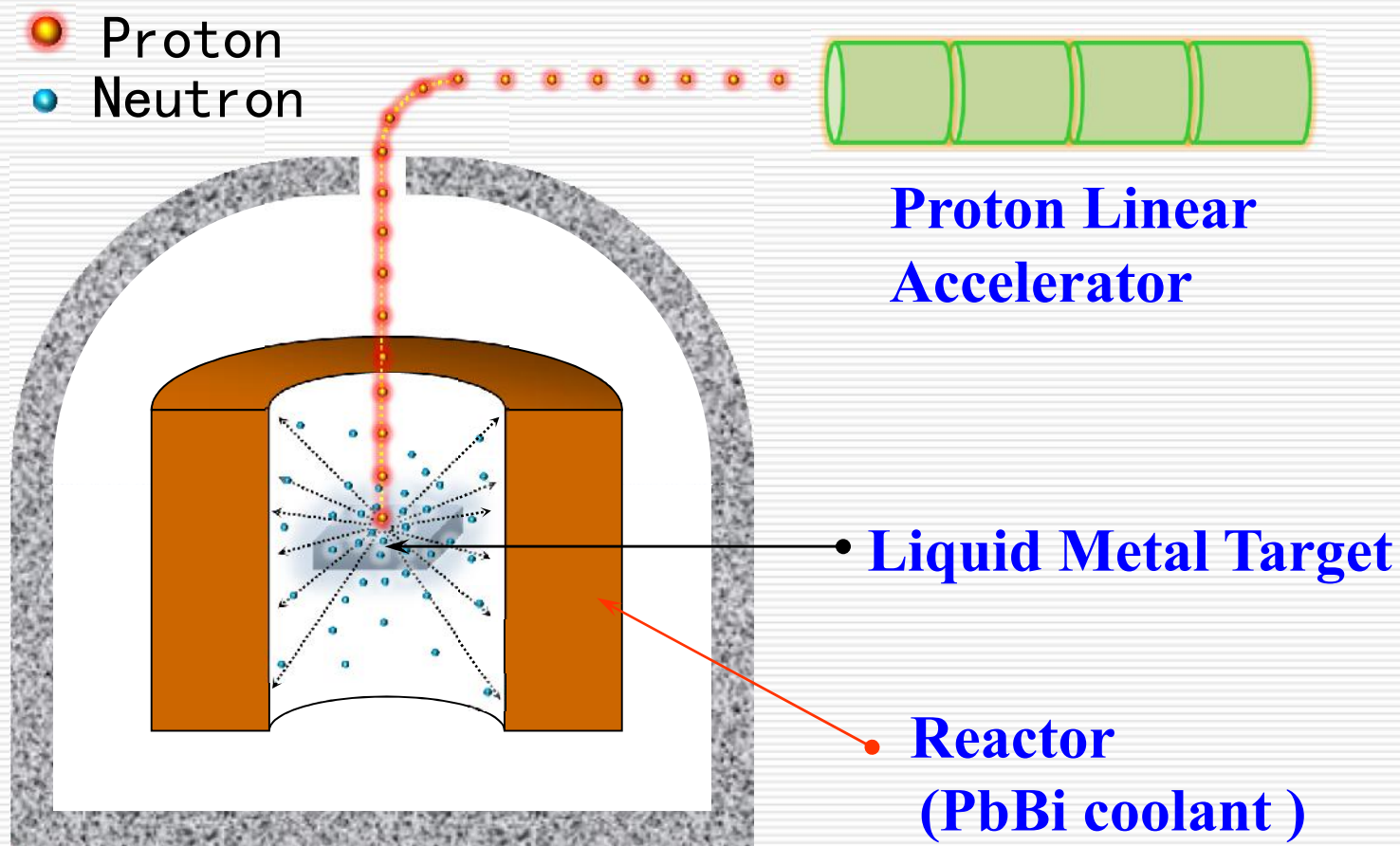
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Principle of ADS



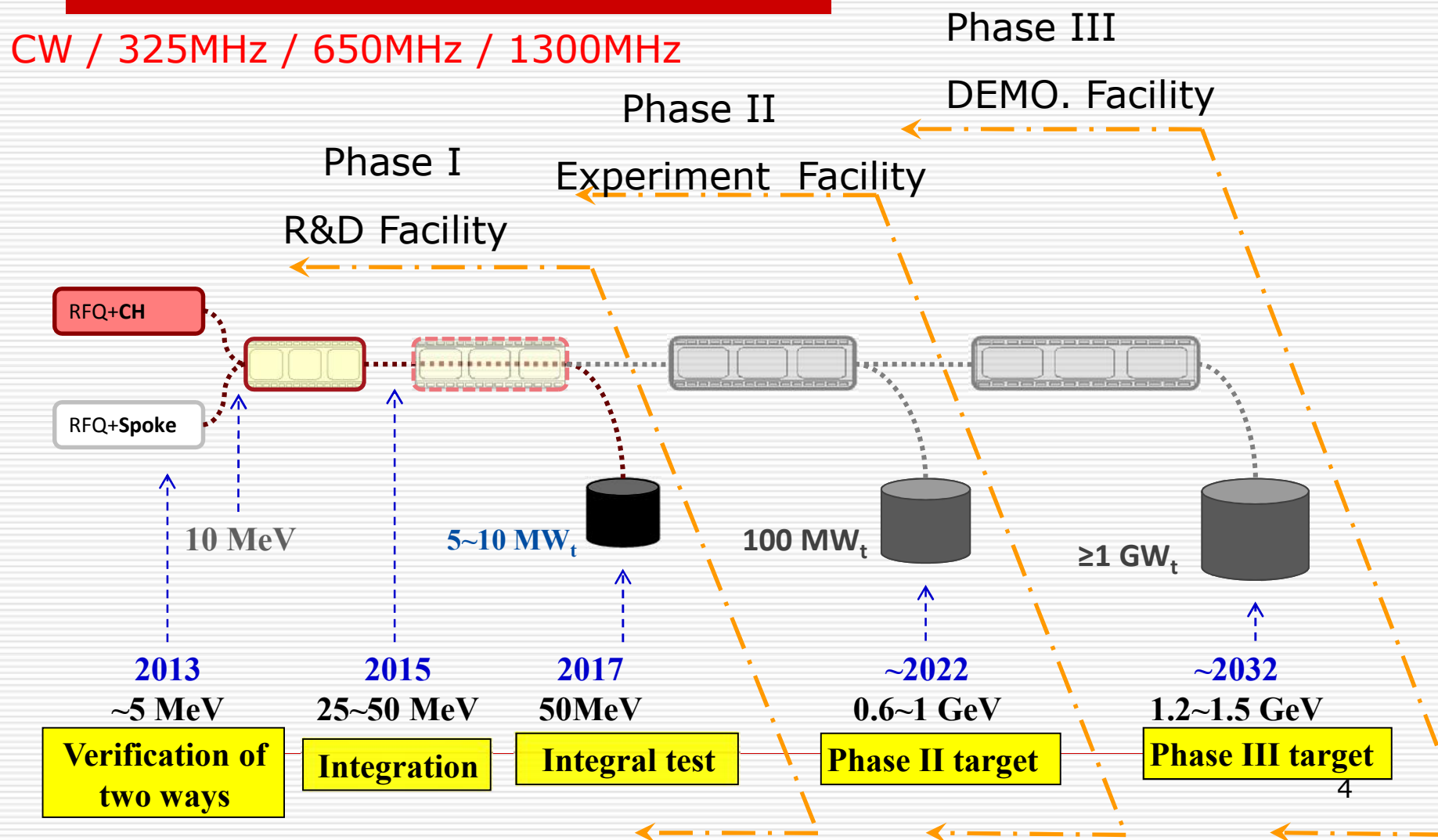


ADS Program in China

- ☐ Nuclear waste is a bottleneck for nuclear power development.
- ☐ ADS has been recognized as a good option for nuclear waste transmutation.
- ☐ As a long-term program, ADS R&D has been supported by CAS.



Road map of ADS Development





Step by Step

Phase I : **Test Facility:** 50MeV, 10mA

2010-2012: Key technology R&D

ECR ion source, RFQ, SC cavity etc.

2012-2017: Integrate Test facility

Phase II (2017~2022): **Exp. Facility:** $\sim 0.6\sim 1\text{GeV}$, 10mA

Phase III (2023~2032): **Demo Facility:** $\sim 1.2\sim 1.5\text{GeV}$, 10mA

ADS R&D Phase I has been approved.
1.8B Chinese Yuan,(0.65B for the Linac)



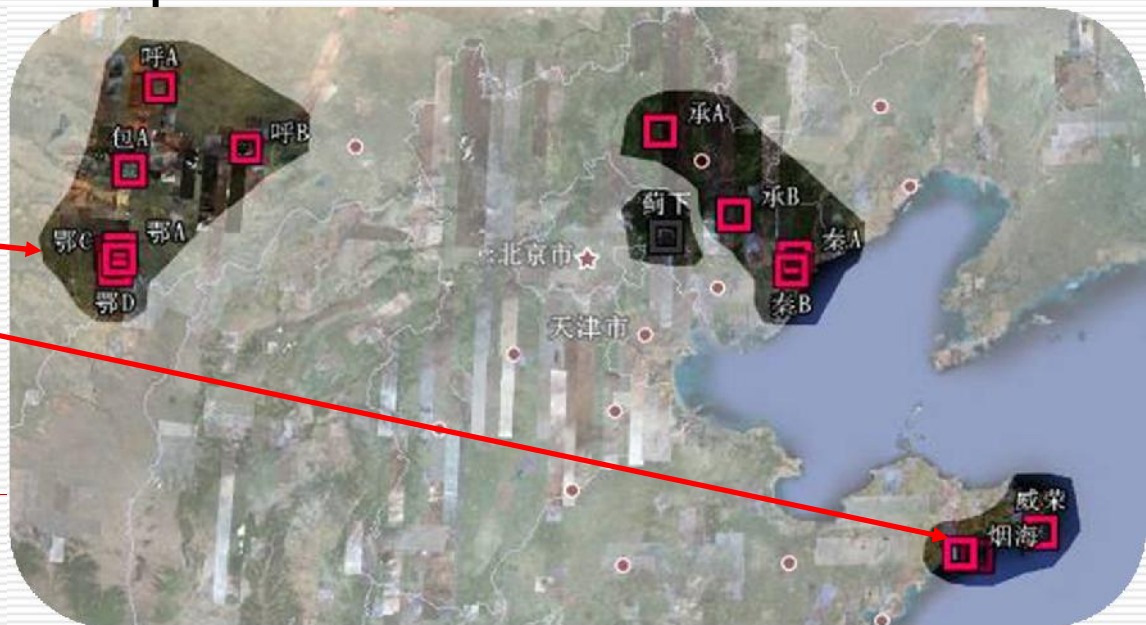
R&D Team & Sites

➤ Team

- CAS: IHEP, IMP, IPP, USTC, ...
- 3 NP Com. + Univ.
- Local Government cooperation
- International Cooperation

➤ Sites (candidate)

- Erdos
- Haiyang





50MeV(Phase I) Accelerator with spoke cavities

Ion source, RFQ MEBT



Spoke009

Spoke014

Spoke033



3~5.5MeV
(9 cavities)



5.5~21MeV
(27 cavities)

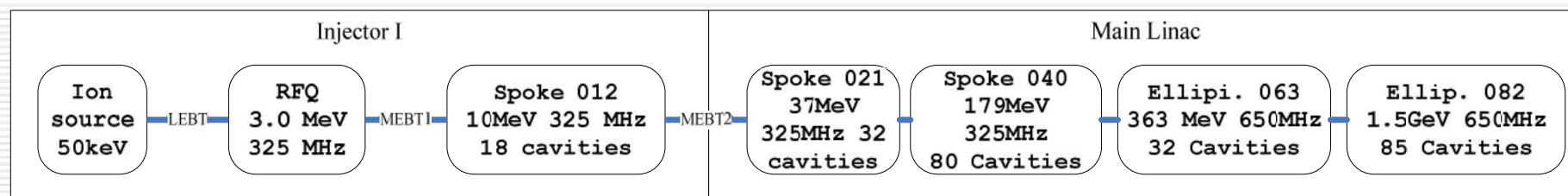


21~50MeV
(24 cavities)

- Same frequency (325MHz), single-spoke
- Three β : 0.09, 0.14 and 0.33



Linac (Latest version)



- Spoke009+Spoke014=>Spoke012
- Beam aperture 50mm=>40mm



key technology for ADS accelerator at Phase I

Target : Verify the feasibility of preliminary design for accelerator with low energy through jointing study on key technologies

1. *Accelerator Physics*
2. *Ion Source*
3. *CW RFQ*
4. *SC Spoke ($\beta=0.09, 0.14, 0.33$) and CH cavity*
5. *High power couplers*
6. *Cryomodule*
7. *RF source* (CW Klystron, CW SSA, LLRF)
8. *Control & Instrumentation*
9. ...



Thanks for your
attention!